

Application No.: 09/683,298

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-4 [Cancelled]

5. [Currently Amended] An apparatus, comprising:
- a plurality of deposit elements to deposit biological materials on a depositing surface;
- a first mounting assembly operatively coupled to enable movement of the deposit elements, wherein the first mounting assembly comprises a first rotatable element that permits the deposit elements to rotate in a circular motion around a first axis perpendicular to the depositing surface;
- a second mounting assembly operatively coupled to enable movement of the deposit elements, wherein the second mounting assembly comprises a second rotatable element that permits the deposit elements to rotate in a circular motion in a roll direction around a second axis parallel to the depositing surface; and
- a third mounting assembly operatively coupled to enable movement of the deposit elements, wherein the third mounting assembly comprises a third rotatable element that permits the deposit elements to rotate in a circular motion in a pitch direction around a third axis parallel to the depositing surface.
6. [Original] The apparatus of claim 5, wherein:
the deposit elements include pins, quills, or jetting elements.
7. [Original] The apparatus of claim 5, wherein:
the second and third axes are perpendicular to each other.
8. [Currently Amended] The apparatus of claim 5, wherein:

the first mounting assembly is movable permits rotation independently of one or both of the second and third mounting assemblies such that the circular movement around the first axis is uncoupled from the circular movement around one or both of the second and third axes, respectively.

9. [Currently Amended] The apparatus of claim 5, wherein:

the second mounting assembly is movable permits rotation independently of one or both of the first and third mounting assemblies such that the circular movement around the second axis is uncoupled from the circular movement around one or both of the first and third axes, respectively.

10. [Previously Amended] The apparatus of claim 5, wherein:

the depositing surface is a surface of a substrate; and
the apparatus further comprises a holding element to hold the substrate.

11. [Original] The apparatus of claim 10, wherein:

the depositing surface is substantially flat.

12. [Previously Amended] The apparatus of claim 10, wherein:

the substrate includes a second substantially flat surface parallel and opposed to the depositing surface; and

the holding element includes a platen having a substantially flat surface to conformingly receive the second surface of the substrate.

13. [Original] The apparatus of claim 12, wherein:

the substrate includes a microscope slide.

14. [Previously Amended] The apparatus of claim 5, further comprising:

one or more reference planes for registering the deposit elements.

15. [Previously Amended] The apparatus of claim 14, wherein:
the depositing surface includes a top surface of a microscope slide; and
the one or more reference planes includes a yaw reference plane perpendicular to
the first axis.
16. [Currently Amended] The apparatus of claim 5, further comprising:
one or more securing elements to secure the deposit elements at a first position
with respect to circular movement around the first axis, a second position with respect to
circular movement in the roll direction around the second axis, and a third position with
respect to circular movement in the pitch direction around the third axis.
17. [Original] The apparatus of claim 16, wherein:
the first, second, and third positions are determined so that biological materials
are deposited from each of the deposit elements at substantially a ninety degree angle to
the depositing surface.
18. [Original] The apparatus of claim 5, wherein:
the first mounting assembly includes one or more bearing surfaces concentric
with the first axis.
19. [Previously Amended] The apparatus of claim 18, further
comprising:
a gantry; and wherein
the first mounting assembly further includes a print head mount to mount the first
mounting assembly to the gantry, and a head mounting plate coupled to the deposit
elements and including the one or more bearing surfaces.
20. [Original] The apparatus of claim 5, wherein:
the first mounting assembly provides yaw adjustment using two or more reference
surfaces.

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21. [Original] The apparatus of claim 20, wherein:
the yaw adjustment includes rotating the depositing elements about the first axis
without additional translation in a plane parallel to the depositing surface.
22. [Currently Amended] An apparatus, comprising:
a first mounting assembly operatively coupled to enable movement of a plurality
of biological deposit elements, wherein the first mounting assembly comprises a first
rotatable element that permits the deposit element to rotate in a circular motion around a
first axis;
a second mounting assembly operatively coupled to enable movement of the
biological deposit elements, wherein the second mounting assembly comprises a second
rotatable element that permits the deposit elements to rotate in a circular motion in a roll
direction around a second axis different from the first axis; and
a third mounting assembly operatively coupled to enable movement of the
biological deposit elements, wherein the third mounting assembly comprises a third
rotatable element that permits the deposit elements to rotate in a circular motion in a pitch
direction around a third axis different from the first and second axes.

Claims 23-33 [Cancelled]